Honors Chemistry - Atomic Structure & Energy of Electrons Lab 1

Stasya

1 Lab 1: Average Atomic Mass of Pennies

Needed Information: The average mass of a pre-1982 penny is 3.1 g. The average mass of a post-1982 penny is 2.5 g.

Purpose: In this activity, you will determine the number of each type of penny in the canister.

Safety: Read the procedure and include any safety information specific to this lab in this section.

Procedure: The mass of the film canister is recorded on the label. Determine the mass of the ten pennies contained in the canister. Record your results.

Data and Observations:

Label your mass of the container, the container with the pennies, and the mass of the pennies in the container.

Calculations:

1. Let's call the number of pre-1982 pennies x and the number of post-1982 pennies y. Write a mathematical equation showing that the total pennies add up to 10.
2. Write another equation showing that the total mass of pennies is equal to x times its average mass added to y times its average mass.
3. You now have two equations and two unknowns, x and y. Use algebra to solve the system of equations for both x and y. Round your results to the nearest whole number.

Post-Lab Questions:

1. What are the number of pre-1982 pennies and post-1982 pennies you have?

2. There are three naturally occurring isotopes of magnesium: Mg-24 (23.98 amu) which is found in 78.70% abundance; Mg-25 (24.99 amu) which is found in 10.13% abundance; and Mg-26 (25.98 amu) which is found in 11.17% abundance. Calculate the average atomic mass of magnesium.
3. The average atomic mass of boron is 10.81 amu. The naturally occurring isotopes of boron are B-10 (10.01 amu) and B-11 (11.01 amu). Determine the percent of both naturally occurring isotopes.
4. What does it mean when it says pennies are quantized?

Conclusion & Sources of Error: Don't forget to include these sections in your lab report!